

REMARKS

Claims 1-6 are pending in the application.

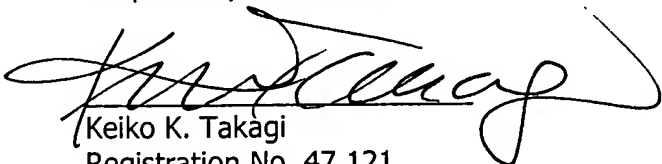
At page 2 of the Office Action, the provisional double-patenting rejection of claims 1-6 under 35 U.S.C. 101 as claiming the same invention as that of claims 17-20 of co-pending Application No. 10/221,447 is maintained.

It is respectfully submitted that claims 17-20 of Application No. 10/221,447 were canceled in an amendment filed on January 14, 2005 (a copy of the amendments to the claims is submitted herewith). Therefore, it is respectfully submitted that there will be no double-patenting problem, and withdrawal of the provisional double-patenting rejection is respectfully requested.

In view of the above, reconsideration and allowance of claims 1-6 is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: May 6, 2005



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Minako HORIBA, et al.

Appln. No.: 10/221,447

Confirmation No.: 9847

Filed: September 12, 2002



Docket No: Q62845

Group Art Unit: 1754

Examiner: Edward M. Johnson

For: PROCESS FOR PURIFYING OCTAFLUOROPROPANE, PROCESS FOR PREPARING THE SAME,
AND USE THEREOF

AMENDMENT UNDER 37 C.F.R. § 1.111

MAIL STOP AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Amendment is submitted in response to the Office Action dated October 15, 2004.

Review and reconsideration on the merits in view of the following remarks and amendments is respectfully requested.

Please amend the above-identified application as follows on the accompanying pages.

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IN THE SPECIFICATION:

Please replace the paragraph bridging pages 2-3 with the following amended paragraph:

With respect to the production process of FC-218, for example, a method of electrolytically fluorinating 1-chloropropane (see, U.S. Patent 3,709,800), a method of reacting trifluoropentachloropropane with manganese trifluoride (see, U.S. Patent 2,578,721) and a method of reacting hydrogen fluoride and chlorine with compounds such as propane and propylene (see, U.S. Patent ~~520,0835~~, 220,083) are known. However, in these methods, a compound containing chlorine is used as a starting material and therefore, a chlorine-containing compound is produced as a by-product and mixed into FC-218 as impurities.

Please replace the second full paragraph on page 3 with the following amended paragraph:

In addition, a method of fluorinating hexafluoropropene (hereinafter sometimes referred to as "FC-1216") to produce FC-218 is known. For example, a method of reacting FC-1216 with a fluorine gas under dilution with an inert gas and a reaction product gas (~~see, JP-B-62-61682~~) (~~the term "JP-B" as used herein means an "examined Japanese patent publication"~~), a method of electrolytically fluorinating FC-1216 in hydrogen fluoride (see, JP-B-62-61115) (~~the term "JP-B" as used herein means an "examined Japanese patent publication"~~), and a method of reacting at least one high-valence metal fluoride selected from cobalt trifluoride, manganese trifluoride and silver difluoride with FC-1216 (see, JP-B-62-54777) are known.

Please replace the paragraph bridging pages 21 and 22 with the following amended paragraph:

~~In the~~The method for preparing the crude octafluoropropane is not limited, and a known method may be employed. As described above, a crude octafluoropropane can be produced by a known method, for example, by a method of electrolytically fluorinating 1-chloropropane (see, U.S. Patent 3,709,800), a method of reacting trifluoropentachloropropane with manganese trifluoride (see, U.S. Patent 2,578,721) or a method of reacting hydrogen fluoride and chlorine with compounds such as propane and propylene (see, U.S. Patent ~~520,083~~5,220,083).

Please replace the first full paragraph on page 22 with the following amended paragraph:

To prepare the crude octafluoropropane containing impurities, a method of fluorinating a hexafluoropropene can be employed. For example, the crude octafluoropropane can be produced by known methods such as a method of reacting FC-1216 and fluorine gas under dilution with an inert gas and a reaction product gas (~~see, JP-B-62-61682~~), a method of electrically fluorinating FC-1216 in hydrogen fluoride (see, JP-B-62-61115) and a method of reacting at least one high-valence metal fluoride selected from cobalt trifluoride, manganese trifluoride and silver difluoride with FC-1216 (see, JP-B-62-54777).

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A process for purifying an octafluoropropane, comprising the step of contacting a crude octafluoropropane containing impurities with an impurity decomposing agent under elevated temperature and then with an adsorbent to substantially remove said impurities from said crude octafluoropropane,

wherein said impurity decomposing agent comprises an iron oxide and an alkaline earth metal compound.

2. (canceled).

3. (currently amended): The process for purifying an octafluoropropane as claimed in ~~claim 2~~claim 1, wherein said iron oxide is ferric oxide.

4. (original): The process for purifying an octafluoropropane as claimed in claim 3, wherein said ferric oxide is γ -iron hydroxide oxide and/or γ -ferric oxide.

5. (currently amended): The process for purifying an octafluoropropane as claimed in any one of claims ~~2-1, 3~~1, 3 ~~or~~ 4, wherein said alkaline earth metal compound is at least one compound selected from the group consisting of oxides of an alkaline earth metal, hydroxides

of an alkaline earth metal and carbonates of an alkaline earth metal, wherein the alkaline earth metal is selected from the group consisting of magnesium, calcium, strontium and barium.

6. (currently amended): The process for purifying an octafluoropropane as claimed in claim 1-~~or~~-2, wherein said impurity decomposing agent contains from 5 to 40% by mass of an iron oxide and from 60 to 95% by mass of an alkaline earth metal compound based on the entire mass of said impurity decomposing agent.

7. (currently amended): The process for purifying octafluoropropane as claimed in claim 1-~~or~~-2, wherein said impurity decomposing agent is a granule comprising a powder of said iron oxide having an average particle size of 100 μm or less and a powder of said alkaline earth metal compound having an average particle size of 100 μm or less.

8. (currently amended): The process for purifying an octafluoropropane as claimed in claim 1-~~or~~-2, wherein said impurity decomposing agent is a granule having an average particle size of 0.5 to 10 mm.

9. (currently amended): The process for purifying an octafluoropropane as claimed in claim 1-~~or~~-2, wherein said crude octafluoropropane is contacted with said impurity decomposing agent at a temperature of 250 to 380°C.

10. (previously presented): The process for purifying an octafluoropropane as claimed in claim 1, wherein said adsorbent is at least one member selected from the group consisting of activated carbon, molecular sieve and molecular sieving carbon.

11. (previously presented): The process for purifying an octafluoropropane as claimed in claim 1, wherein said crude octafluoropropane contains said impurities in an amount of 10 to 10,000 ppm by mass.

12. (original): The process for purifying an octafluoropropane as claimed in claim 11, wherein said impurity is at least one compound selected from the group consisting of chloropentafluoroethane, hexafluoropropene, chlorotrifluoromethane, dichlorodifluoromethane and chlorodifluoromethane.

13. (original): The process for purifying an octafluoropropane as claimed in claim 12, wherein after the impurities are substantially removed, the concentration of impurities remaining in the octafluoropropane is less than 1 ppm by mass.

14. (currently amended): A process for preparing an octafluoropropane, comprising the steps of producing a crude octafluoropropane containing impurities, and contacting said crude octafluoropropane with an impurity decomposing agent under elevated temperature and then with an adsorbent to obtain an octafluoropropane from which impurities are substantially

removed, wherein said impurity decomposing agent comprises an iron oxide and an alkaline earth metal compound.

15. (original): The process for preparing an octafluoropropane as claimed in claim 14, wherein the step of producing an octafluoropropane containing impurities is a fluorination of hexafluoropropene.

16. (original): The process for preparing an octafluoropropane as claimed in claim 14 or 15, wherein said impurity is at least one compound selected from the group consisting of chloropentafluoroethane, hexafluoropropene, chlorotrifluoromethane, dichlorodifluoromethane and chlorodifluoromethane.

Claims 17-20. (canceled).

REMARKS

Claims 1 and 3-16 are all the claims pending in the present application.

The specification has been amended to correct the number of the U.S. Patent cited at pages 3 and 22 from U.S. Patent 520,083 to 5,220,083, and to delete the reference to JP 62-61682B on pages 3 and 22.

Claims 1 and 14 have been amended to incorporate claim 2, which has been canceled.

Claims 3 and 5-9 have been amended so that they do not depend from canceled claim 2.

Claim 5 has been further amended to recite "oxides of an alkaline earth metal", "hydroxides of an alkaline earth metal" and "carbonates of an alkaline earth metal" and that "the alkaline earth metal is selected from the group consisting of magnesium, calcium, strontium and barium" for purposes of further clarity.

Entry of the above amendments is respectfully requested.

Initially, Applicants note with appreciation the Examiner's indication that claims 2-7 are allowable.

I. Response to Rejection of Claim 5 under 35 U.S.C. § 112, second paragraph

Claim 5 has been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. The Examiner asserts that it is unclear whether the listed cation metals apply to each listed anion or only to carbonates.

Without acquiescing the merits of the rejection, claim 5 has been amended to recite "oxides of an alkaline earth metal", "hydroxides of an alkaline earth metal" and "carbonates of

an alkaline earth metal” and that “the alkaline earth metal is selected from the group consisting of magnesium, calcium, strontium and barium.”

It is respectfully submitted that the language of amended claim 5 is clear and definite, and that claim 5 complies with 35 U.S.C. § 112, second paragraph. Accordingly, withdrawal of the foregoing rejection is respectfully requested.

II. Response to Rejection of Claims 17-20 under 35 U.S.C. § 102(e)

Claims 17-20 have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly being obvious over Ohno et al., U.S. Patent No. 6,720,464 (“Ohno”).

Without acquiescing the merits of the rejection, claims 17-20 have been canceled. In view of the cancellation of claims 17-20, the rejection is believed to be moot. Accordingly, withdrawal of the rejection is respectfully requested.

III. Response to Rejections of Claims 1, 8(1), 9(1) and 10-20 under 35 U.S.C. § 103(a)

Claims 1, 8(1), 9(1), and 10-20 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ohno in view of Li, U.S. 6,187,077.

Without acquiescing the merits of the rejection, claims 1 and 14 have been amended to incorporate claim 2, which was not included in this rejection and which was indicated as allowable.

Ohno does not disclose Applicants’ impurity decomposing agent comprising an iron oxide and an alkaline earth metal compound. In this regard, the Examiner appears to interpret the meaning of “contacting with KOH to remove acid gas” of Ohno as corresponding to “contacting

with an impurity decomposing agent" of the present invention. However, the KOH used in Ohno is completely different from the claimed impurity decomposition agent which comprises an iron oxide and an alkaline earth metal compound.

Therefore, Ohno does not teach or suggest the present invention.

In addition, each of claims 8-13 and 15-16 depend, directly or indirectly, from claim 1 or claim 14. Accordingly, it is respectfully submitted that claims 8-13 and 15-16 are patentable over the cited art for at least the same reasons as claims 1 and 14.

In view of the above, withdrawal of the rejection is respectfully requested.

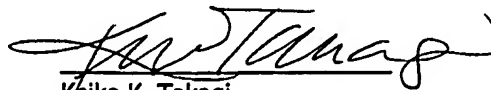
IV. Conclusion

Reconsideration and withdrawal of the §112, §102 and §103 rejections, and allowance of claims 1 and 3-16 are respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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